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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/099,953	03/19/2002	Yasuhiro Ayukawa	1517-0138P	6331
2292	7590	02/07/2006		
BIRCH STEWART KOLASCH & BIRCH			EXAMINER	
PO BOX 747			GAKH, YELENA G	
FALLS CHURCH, VA 22040-0747			ART UNIT	PAPER NUMBER
			1743	

DATE MAILED: 02/07/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>
	10/099,953	AYUKAWA ET AL.
	<b>Examiner</b>	<b>Art Unit</b>
	Yelena G. Gakh, Ph.D.	1743

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

1) Responsive to communication(s) filed on 27 December 2005.  
 2a) This action is **FINAL**.                            2b) This action is non-final.  
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

4) Claim(s) 2-23 is/are pending in the application.  
 4a) Of the above claim(s) 5,6,9-11,20 and 21 is/are withdrawn from consideration.  
 5) Claim(s) \_\_\_\_\_ is/are allowed.  
 6) Claim(s) 2-4,7,8,13-19,22 and 23 is/are rejected.  
 7) Claim(s) \_\_\_\_\_ is/are objected to.  
 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

9) The specification is objected to by the Examiner.  
 10) The drawing(s) filed on 27 December 2005 is/are: a) accepted or b) objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
 a) All    b) Some \* c) None of:  
 1. Certified copies of the priority documents have been received.  
 2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

1) Notice of References Cited (PTO-892)  
 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)  
 3) Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
 Paper No(s)/Mail Date 03/24/05.

4) Interview Summary (PTO-413)  
 Paper No(s)/Mail Date. \_\_\_\_\_.  
 5) Notice of Informal Patent Application (PTO-152)  
 6) Other: \_\_\_\_\_.

## **DETAILED ACTION**

1. Amendment to the claims, specification and drawings filed on 12/27/05 is acknowledged. Claim 1 is cancelled. Claims 2-23 are pending in the application, of which claims 5-6, 9-11 and 20-21 are withdrawn from consideration as directed toward non-elected inventions. Thus, claims 2-4, 7-8, 13-19 and 22-23 are considered on merits.

### ***Response to Amendment***

2. The examiner maintains objection to the specification and rejection of the pending claims as being non-enabled by the specification.

### ***Specification***

3. While the examiner appreciates the Applicants' attempt to amend the specification in order to make it more readable, the specification is still very difficult to understand regarding its language and the subject matter. The examiner requests the Applicants to explain in clear and definite terms the essence of their invention. The following are the questions that the examiner expects the Applicants to answer.

A. What are chemical processes that are taking place in preparing a "sulfur-capturing liquid"? What is left in this liquid after all precipitates are removed?

B. How does X-ray fluorescence participate in precipitating silver or sulfur compounds? Why the liquid should be irradiated for the precipitate to be formed? The examiner is not aware of any application of X-ray fluorescence for performing physical precipitation of any compounds. The examiner respectfully requests the Applicants to provide any reference relating to such application. If X-ray fluorescence is used for degrading organic sulfur compounds, the examiner respectfully requests the Applicants to provide corresponding reference. To the examiner's knowledge, while some degradation may occur, it is not clear, why all organic sulfur material will degrade yielding sulfur which would react with silver? Different sulfur compounds react differently with different silver compounds yielding various products. Elemental sulfur

reacts with elemental silver on air yielding silver sulfide without any X-ray fluorescence. The chemical basis for the method disclosed is so unclear that the examiner is not quite sure what should be searched in the literature regarding the case.

C. How does the “sulfur-capturing liquid” “capture” all sulfur (organic, inorganic, elemental) in the analyte oil sample? What are chemical processes behind such capture?

D. What is “downward” and “upward” X-ray irradiation of the solution, which has such different effects on the solution – the first allows the precipitate to be formed, and the second allows the precipitate to be analyzed? The examiner respectfully requests the Applicants to provide any references related to “downward” and “upward” X-ray techniques and their different effects on the solution.

E. How is it known that the method for capturing sulfur in the analyte oil sample is quantitative, i.e. that in fact all sulfur in the oil sample is captured by the method of the invention?

At this point, the examiner concludes that the specification is written in an unclear and indefinite language and therefore is objected to under 112, first paragraph.

#### ***Claim Rejections - 35 USC § 112***

4. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 2-4, 7-8, 13-19 and 22-23 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. Claim 3 recites “irradiating the solution with electromagnetic waves or corpuscular rays to precipitate silver compounds and/or silver produced by a reaction with impurities which might be contained in the solution”. The specification does not provide and physical or chemical basis for performing such step. The step is unexplainable in light of basic knowledge of physics or

chemistry. The examiner is not aware of any method for precipitating silver compounds by irradiating solution, which may contain silver cations, with “electromagnetic waves or corpuscular rays”, which in turn lead to a reaction between silver and “impurities which might be contained in the solution” (which impurities?) or even yield silver. The examiner respectfully requests the Applicants to provide experimental evidence of such processes or literature references describing such method. Moreover, the specification discloses “sulfide-containing silver compounds and silver” (page 14, lines 21-22) (what are “sulfide-containing silver compounds? There is only one silver sulfide compound,  $\text{Ag}_2\text{S}$ ) that are precipitated by irradiation with electromagnetic waves or corpuscular rays. The following disclosure is completely unclear: “That is, S contained as the impurity (which impurity? a compound? an element?) is reacted by irradiation with the primary X-rays containing X-rays (how is that?) easily absorbed into S, whereby S is precipitated after conversion into both (inorganic and organic) silver compounds mainly containing silver sulfide”. Also silver chloride is precipitated, silver oxide, etc. Is the reaction of e.g. transforming silver cations into silver oxide by “irradiating” it with “electromagnetic waves” an invention of the Applicants? Then an experimental prove of such transformation should be provided by the Applicants. If this type of reactions is known, then the corresponding references should be provided. As far as the examiner is aware, X-ray irradiation is used as an analytical technique in studying precipitates and particles, rather than a chemical tool for performing chemical reactions.

The claims are not enabled by the specification, since the specification is written in unclear and indefinite terms and raises many questions regarding the essence of its technical disclosure.

The examiner considers the application is not patentable at this stage.

The Applicants are expected to provide explanations to the questions raised by the examiner.

#### ***Response to Arguments***

5. The Applicants' arguments filed on 12/27/05 have been fully considered.

The examiner would like to thank the Applicants and the Applicants' Representatives for their efforts in prosecution of the case. Unfortunately, too many issues remain unresolved in the case regarding its language as well as its subject matter. The examiner considers the disclosure insufficient to enable the pending claims. There is no apparent evidence that the Applicants quantitatively extract all sulfur from the analyte oil sample with the method disclosed. Many questions regarding such techniques as "downward" and "upward" X-ray fluorescence remain unclear and not supported by any references. To the examiner's knowledge, X-ray fluorescence was not used for degrading organic sulfuric compounds, since then it would not have been used as an analytical technique. It is possible that some degradation may occur; moreover, it is well known that silver reacts with sulfur on air forming silver sulfide. This reaction does not require any X-ray. However, it is not clear, how it is related to the present invention. The examiner understands that experiments were performed for measuring sulfur in the oil samples using X-ray fluorescence. However, there is no evidence that the measurement was performed for all sulfur present in the samples. If only a part of sulfur prepared by this method is analyzed, then the method is not quantitative.

The examiner expects the Applicants to answer all questions raised by the examiner in order to re-examine the case in view of the Applicants' response.

### *Conclusion*

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Yelena G. Gakh, Ph.D. whose telephone number is (571) 272-1257. The examiner can normally be reached on 9:30 am - 6:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jill A. Warden can be reached on (571) 272-1267. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
**YELENA GAKH**  
**PRIMARY EXAMINER**

2/2/06